

What is claimed is:

1. A system for monitoring the concentration of a medium in at least one container, comprising:

an energy emitting device, adapted to emit a first energy signal toward a location in said container, said first energy signal having a wavelength that is substantially equal to a wavelength at which said medium absorbs said first energy signal so that absorption of said first energy signal changes a refractive index of a portion of said medium or an adjoining medium;

a second energy emitting device, adapted to emit a second energy signal toward said portion of said medium while said refractive index of said portion of said medium is changed by said first energy signal; and

a detector, adapted to detect a portion of said second energy signal that passes through said portion of said medium.

2. A system as claimed in claim 1, further comprising:

a signal analyzer, adapted to analyze said detected portion of said second energy signal to determine an amount of a sample in said container based on a concentration of said medium in said container.

3. A system as claimed in claim 1, wherein:

said medium or adjoining medium includes a gas; and

said first energy emitting device is adapted to emit said first energy signal at said wavelength at which said gas absorbs said first energy signal.

4. A system as claimed in claim 1, wherein:
said medium or adjoining medium includes a liquid; and
said first energy emitting device is adapted to emit said first energy signal at said wavelength at which said liquid absorbs said first energy signal.
5. A system as claimed in claim 1, wherein:
said medium or adjoining medium includes a solid; and
said first energy emitting device is adapted to emit said first energy signal at said wavelength at which said solid absorbs said first energy signal.
6. A system as claimed in claim 1, wherein:
said medium includes oxygen; and
said first energy emitting device is adapted to emit said first energy signal at said wavelength at which oxygen absorbs said first energy signal.
7. A system as claimed in claim 1, wherein:
said medium includes carbon dioxide; and
said first energy emitting device is adapted to emit said first energy signal at said wavelength at which carbon dioxide absorbs said first energy signal.
8. A system as claimed in claim 1, wherein:
said medium includes one of NH_3 , H_2S , CH_4 or SO_2 ; and
said first energy emitting device is adapted to emit said first energy signal at said wavelength at which said one of NH_3 , H_2S , CH_4 or SO_2 absorbs said first energy signal.

9. A system as claimed in claim 1, wherein:

said first energy emitting device includes a laser which is adapted to emit laser light as said first energy signal.

10. A system as claimed in claim 1, wherein:

said second energy emitting device includes a laser which is adapted to emit laser light as said second energy signal.

11. A method for monitoring the concentration of a medium in at least one container, comprising:

emitting a first energy signal toward a location in said container, said first energy signal having a wavelength that is substantially equal to a wavelength at which said medium absorbs said first energy signal so that absorption of said first energy signal changes a refractive index of a portion of said medium or an adjoining medium;

emitting a second energy signal toward said portion of said medium or adjoining medium while said refractive index of said portion of said medium is changed by said first energy signal; and

detecting a portion of said second energy signal that passes through said portion of said medium or adjoining medium.

12. A method as claimed in claim 11, further comprising:

analyzing said detected portion of said second energy signal to determine an amount of a sample in said container based on a concentration of said medium in said container.

13. A method as claimed in claim 11, wherein:
said medium includes a gas; and
said first energy signal is emitted at said wavelength at which said gas absorbs said first energy signal.

14. A method as claimed in claim 11, wherein:
said medium includes a liquid; and
said first energy signal is emitted at said wavelength at which said liquid absorbs said first energy signal.

15. A method as claimed in claim 11, wherein:
said medium includes a solid; and
said first energy signal is emitted at said wavelength at which said solid absorbs said first energy signal.

16. A method as claimed in claim 11, wherein:
said medium includes oxygen; and
said first energy signal is emitted at said wavelength at which oxygen absorbs said first energy signal.

17. A method as claimed in claim 11, wherein:
said medium includes carbon dioxide; and
said first energy signal is emitted at said wavelength at which carbon dioxide absorbs said first energy signal.

18. A method as claimed in claim 11, wherein:
said medium includes one of NH_3 , H_2S , CH_4 or SO_2 ; and
said first energy signal is emitted at said wavelength at which said one of NH_3 , H_2S , CH_4 or SO_2 absorbs said first energy signal.
19. A method as claimed in claim 11, wherein:
said first energy emitting step includes energizing a laser to emit laser light as said first energy signal.
20. A method as claimed in claim 11, wherein:
said second energy emitting step includes energizing a laser to emit laser light as said second energy signal.